

## REMARKS

Claims 1-18 are pending herein. Claims 1-10 were rejected. Claims 1 and 7 have been amended and claims 11-18 are newly presented by this amendment. Claim 1 is amended to remove one limitation and claim 7 is amended to correct a typographical error. In view of the following remarks, it is respectfully requested that the present application be passed to issuance.

Claims 1-10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kunikiyo (U.S. Patent 6,333,232) in view of Son, *et al.* (U.S. Patent 5,904,538). Applicant respectfully traverses this rejection.

Claim 1 specifically recites “implanting F<sub>2</sub> into side walls of said STI liner oxidation layer at a large tilted angle in sufficient amounts to affect reduction of negative bias temperature and stability and enhance gate oxidation at the STI corner after a high density plasma fill of said STI F<sub>2</sub> implanted liner oxidation layer.” It is respectfully submitted that the references of record to not teach nor suggest the limitations of claim 1.

First, there is no suggestion to combine the Son, *et al.* reference with the Kunikiyo reference because Kunikiyo teaches devices that already exhibit growth of bird's beak and teaches a process that applies a silicon oxynitride film to suppress excessive growth of the bird's beak. Thus, one of ordinary skill in the art would never consider to perform an implantation to enhance oxidation-in-the trench-corner-of-the device-disclosed-in-Kunikiyo.

Moreover, even if such a combination were actually proper, this combination would still not result in the subject matter of claim 1. As admitted by the Examiner, Kunikiyo does not teach implanting F<sub>2</sub> into side walls of the STI liner. Son, *et al.* does not teach this step either. Rather, Son, *et al.* discloses a tilted ion implant before forming the trench and before any liner can be formed. Thus, neither reference teaches nor suggests implanting F<sub>2</sub> into side walls of an



STI linter oxidation layer. According to the present invention as claimed in claim 1, the implanted ions must also be along the side walls in order to affect reduction of the negative bias temperature instability.

Since the references are not properly combinable and, even if they were, the combination does not yield the invention of claim 1, it is respectfully requested that claim 1 be allowed.

It is respectfully submitted that dependent claims 2-10 are allowable by reason of depending from an allowable claim as well as for adding further limitations.

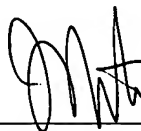
Claims 11-18 have been added herein to more comprehensively claim the invention as originally filed. No new matter has been added. It is respectfully submitted that claims 11-18 are allowable over the references of record. In particular, claim 11 specifically recites that fluorine is implanted into the side walls of the trench after forming the trench. Neither reference teaches nor suggests implanting fluorine into a trench side wall.

In view of the above, Applicants believe the claims are now in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Ira S. Matsil, Applicants' Attorney at 972-732-1001 so that such issues may be resolved as expeditiously as possible.

Respectfully submitted,

6/9/03

Date



Ira S. Matsil  
Attorney for Applicants  
Reg. No. 35,272

Slater & Matsil, L.L.P.  
17950 Preston Rd., Suite 1000  
Dallas, Texas 75252-5793  
Tel. 972-732-1001  
Fax: 972-732-9218

